

REMARKS

By the present amendment, the specification and claim 5 have been amended to replace “flakes” by “planchettes.”

A corresponding certified corrective partial English translation of the original PCT application is submitted with this paper.

Further, claim 1 has been amended to replace “colored particles” by “colored planchettes.”

New claims 40 and 41 have been added, which depend on claim 1 and recite that each of said first and second authentication elements is selected from the group as recited in claim 1 except that each occurrence of “particles” is replaced by “planchettes” in claim 40, and “colored particles” is deleted in claim 41, respectively.

Support for the added recitations is found in the original application, for example, at least page 7, lines 1-6.

Claims 1, 4, 9-10, 12-17, 23 and 25-41 are pending in the present application. Claims 1 and 25 are the only independent claims.

I. Art rejection based on Devrient

In the Office Action, claims 1, 4, and 14-16 are rejected under 35 U.S.C. 102(b) as anticipated by U.S. 4,496,961 to Devrient (“Devrient”).

Reconsideration and withdrawal of the rejection is respectfully requested.

Contrary to the assertion in the Office Action, Fig. 2 of Devrient shows a two-ply paper with microcapsules 1 in one ply and color acceptor particles 2 in the other ply. However, at the

time the paper is manufactured, none of these particles is a “fluorescent” particle because the particles are in different plies and they have not reacted together so they are incapable of “fluorescing” (see Devrient at col. 2, line 56: the particles become visible because of the color reaction).

As a result, in this unreacted configuration of the paper of Devrient as manufactured, the particles do not meet the feature of present claim 1 according to which *each of said first and second authentication elements is **selected from the group** consisting of iridescent particles, luminescent fibers, luminescent particles, fluorescent fibers, **fluorescent particles**, phosphorescent fibers, phosphorescent particles, colored fibers, colored particles, thermochromic fibers, thermochromic particles, fibers that react to electromagnetic fields, particles that react to electromagnetic fields, and mixtures thereof.*

Next, when somebody writes on the paper of Devrient, the particles in a contact area between the plies react in the location where pressure is applied during writing, so that a fluorescent zone is created by reacted particles under the area of the writing. However, the only reason why the particles originally in a single ply fluoresce is that, either they have migrated to the other ply to react with the other particles, or the other particle has migrated from the other ply to react with this particle. Thus, as shown on Fig. 2a of Devrient, a zone 3 containing the product of the reaction is formed. This visible zone, in which the visible particles are the reaction product of the particles of both plies, straddles both plies.

As a result, in this reacted configuration of the paper of Devrient, even if it is considered that the reacted particles are “fluorescent particles,” the paper does not meet the feature of

present claim 1 according to which *the first authentication element is of a first type and the second authentication element is of a **second type different from the first type***, and it does not meet the feature of present claim 1 according to which *(1) the first ply **does not include any authentication element of the second type**, and (2) the second ply **does not include any authentication element of the first type***. Namely, the reacted particles, in-so-far they are now fluorescent particles, are present in both plies of the paper of Devrient.

Even if, arguendo, reacted particles were present in only one ply of the paper of Devrient, the other ply would still contain only unreacted particles which are **not selected from the group consisting of iridescent particles, luminescent fibers, luminescent particles, fluorescent fibers, fluorescent particles, phosphorescent fibers, phosphorescent particles, colored fibers, colored planchettes, thermochromic fibers, thermochromic particles, fibers that react to electromagnetic fields, particles that react to electromagnetic fields, and mixtures thereof**, as required by present claim 1.

In support of the above explanation, a copy of the section “Luminescence” in van Renesse, Optical Document Security, Artech House, Boston, Mass., pp. 98-102 (2005) is submitted with this paper. As defined on page 98 of the document, luminescence is “[t]he collective term for the emission of light by substances that are relatively cool.”

Thus, the unreacted particles of Devrient are clearly not “luminescent particles,” and the reacted particles of Devrient, if luminescent, are not segregated into different plies. Therefore, present claim 1 is not anticipated by Devrient, and not obvious over Devrient.

In addition, with respect to dependent claims 4 and 14-16, it is submitted that the combined features of each of these claims are not taught or suggested by Devrient. Therefore, each of claims 4 and 14-16 is not anticipated by, and not obvious over, Devrient.

In view of the above, it is submitted that the rejection should be withdrawn.

II. Art rejections based on Murakami and Detrick

Claim 1 and dependent claims

In the Office Action, the following rejections are set forth:

- Claims 1, 4, 9-10, 12, 14-16, and 23 are rejected under 35 U.S.C. 103(a) as anticipated by US 5,565,276 to Murakami et al. (“Murakami”) in view of US 5,161,829 to Detrick et al. (“Detrick”).
- Claim 13 is rejected under 35 U.S.C. 103(a) as obvious over Murakami in view of Rausing and further in view of US 3,880,706 to Williams (“Williams”).
- Claim 17 is rejected under 35 U.S.C. 103(a) as obvious over Murakami in view of US 6,491,324 to Schmitz et al. (“Schmitz”).

Reconsideration and withdrawal of the rejections is respectfully requested.

In addition to the remarks submitted with the last response, it is submitted that the “dyes or pigments” mentioned at col. 5, lines 44-45 of Murakami are not authentication elements as recited in present claim 1.

Specifically, in the presently claimed invention as recited in present claim 1, each of the first and second authentication elements is ***selected from the group consisting of iridescent particles, luminescent fibers, luminescent particles, fluorescent fibers, fluorescent particles,***

*phosphorescent fibers, phosphorescent particles, colored fibers, **colored planchettes**, thermochromic fibers, thermochromic particles, fibers that react to electromagnetic fields, particles that react to electromagnetic fields, and mixtures thereof.*

It is submitted that the term “planchettes” is a term of the art which is well-understood by the person of the art, and that a dye or pigment is very different from a “planchette” as is well known by the person of the art.

In support of the above explanation, a copy of the section “Planchets” in van Renesse, Optical Document Security, Artech House, Boston, Mass., pp. 75-76 (2005) is submitted with this paper, which explains and illustrates planchettes. Based on the discussions in this document, it is clear that planchettes form authentication elements which are completely different from dyes or pigments.

Further, Detrick discloses many types of papers in general terms, but Detrick systematically indicates that the choices of materials and additives are made “to achieve desired or necessary effects” (col. 3, line 39), the “desired characteristics” (col. 3, line 50), “to achieve the desired end result” (col. 4, line 7), etc.

Here, the teachings of Murakami are to isolate the iridescent particles in a single layer of a multiply paper, as shown on Fig. 5 of Murakami, including when there are particles of different types or colors (see Murakami at col. 3, line 67 to col. 4, line 6). In view of the teachings of Murakami, Detrick fails to provide any particular motivation or incentive to provide different particles in the different layers in Murakami, in the absence of any identified “desired” effect or property as stated by Detrick.

In this respect, it is noted that, if a person of the art considered modifying Murakami, that person would expect different particles in different layers to require different paper stocks for each separate layer. Especially given cost considerations, the person of the art would resist the additional complexity and expense in the absence of a motivation or incentive to modify the teachings of Murakami, since Murakami is completely silent regarding problems such as identifying different authentication elements in a same layer.

Reference is made to the Declaration under Rule 1.132 by Dr. Dietemann, which is submitted with this paper. In particular, Dr. Dietemann states in the Declaration that “*it is clear that the person of ordinary skill in the art would have applied the practice of Murakami so that dyed fibers should be present in the same layer like the nacreous fragments*” (para. 5) and that “[f]rom the point of view of a person of the art concerned with the placement of these authentication features, Detrick is too general to be relevant, because it does not indicate any specific reason to modify a security paper in any particular manner” (para. 6).

See In re Omeprazole Patent Litigation, 536 F.3d 1361 (Fed. Cir. 2008) and the comments on this decision in the USPTO’s 2010 KSR Guidelines at Fed. Reg. Vol. 75, No. 169, pp. 53643-53660 (Sep. 1, 2010): “Even where a general method that could have been applied to make the claimed product was known and within the level of skill of the ordinary artisan, the claim may nevertheless be nonobvious if the problem which had suggested use of the method had been previously unknown.” *Id.* at 53646. Like the unknown problems raised by providing a single coat around the active core of the prior art tablet in In re Omeprazole, here, the difficulties of detecting separately several authentication elements in a same layer of a multiply paper were

not known or ignored by the art, as shown by Murakami nor Detrick, which are completely silent regarding any problem or difficulty of this type.

In contrast, the present inventor has identified the problem of detection of different authentication elements in a same ply, and as a result, he has provided the presently claimed invention wherein the first authentication element is of a first type and the second authentication element is of a second type different from the first type, and (1) the first ply does not include any authentication element of the second type, and (2) the second ply does not include any authentication element of the first type, as recited in present claim 1.

An advantage of these features is that detection of the authentication elements is improved by their separation in separate layers.

These features and their advantages are not taught or suggested in Murakami and Detrick, which are not even aware of any problem raised by different authentication elements in a same layer. Therefore, present claim 1 is not obvious over any combination of Murakami and Detrick.

Further, with respect to the dependent claims, it is submitted that the cited references fail to teach or suggest the combined features of these respective claims. Therefore, each of the claims dependent directly or indirectly on claim 1 is not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the rejections should be withdrawn.

Claim 25 and dependent claims

In the Office Action, the following rejections are set forth:

- Claims 25-30, 33 and 35 are rejected under 35 U.S.C. 103(a) as obvious over US 6,402,888 to Doublet et al. (“Doublet”) in view of Detrick.
- Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as obvious over Doublet as modified by Detrick and further in view of US 2002/011830 to Bakken et al. (“Bakken”).
- Claims 31 and 34 are rejected under 35 U.S.C. 103(a) as obvious over Doublet as modified by Detrick and further in view of Williams.
- Claim 32 is rejected under 35 U.S.C. 103(a) as obvious over Doublet as modified by Detrick and further in view of “Nordic Pulp and Paper Research”.

Reconsideration and withdrawal of the rejections is respectfully requested.

In addition to the remarks submitted with the last response, it is submitted that Detrick discloses many types of papers in general terms, but Detrick systematically indicates that the choices of materials and additives is made “to achieve desired or necessary effects” (col. 3, line 39), the “desired characteristics” (col. 3, line 50), “to achieve the desired end result” (col. 4, line 7), etc. Thus, Detrick does not provide any particular motivation or incentive to separate the fibers from the watermark in Murakami unless such “desired” effect or property was identified.

In particular, it is submitted that the fibers mentioned at col. 3, lines 54-56 of Detrick are the fibers or fiber blends of the paper structure, as shown in the example at col. 3, lines 57-60 of Detrick where “each layer of paper 10, 16 is formed from a blend of cotton and linen fibers.”

Thus, Detrick is completely silent about any reason why a person of the art should add reinforcing fibers that are *such that the paper would have a **mechanical strength higher than a mechanical strength of a paper** having identical weight in g/m^2 and identical composition except without the reinforcing element*, as defined in present claim 25, and this, not only in one layer and not in another layer, but also, in one layer that does not have a watermark, and not in another layer that has a watermark.

Thus, Detrick may indicate to the person of the art that it is possible to select various fiber blends for making layers of multiply paper, but Detrick does not provide any motivation or incentive to provide a different reinforcement in any particular layer and not in another, let alone in one layer that does not have a watermark, and not in another layer that has a watermark.

In this respect, it is noted that if considering modifying Doublet, the person of the art would expect that different fiber blends in different layers would require different paper stocks for each separate layer. Especially given cost considerations, the person of the art would resist the additional complexity and expense in the absence of a motivation or incentive to modify the teachings of Doublet, which is completely silent regarding problems such as identifying a watermark in the presence of reinforcement fibers in the ply that contains the watermark.

Here also, reference is made to the Declaration under Rule 1.132 by Dr. Dietemann, which is submitted with this paper. In particular, Dr. Dietemann states in the Declaration that “[r]einforcing fibers are included in a fiber layer to increase the mechanical strength within the fiber structure, especially the dry mechanical strength” (para. 8), and that, “if the objective is to reinforce a paper, the most effective manner of adding reinforcing fibers is to have the

reinforcing fibers in each layer of a multiply paper; because this would be simpler (and thus, cheaper) to manufacture as discussed above, and also because this would be expected to maximize the paper resistance” (para. 9).

Dr. Dietemann concludes that “[f]rom [his] knowledge and experience, before the present invention, the person of ordinary skill in the art would not have had any reason to depart from this practice without being given a clear objective or instruction to do so, because this would have increased complexity and cost, as well as potential loss of strength in the fiber structure and a lack of homogeneity, without any expected benefit” (para. 10).

See also In re Omeprazole Patent Litigation, supra (claim nonobvious when the problem which had suggested an invention had been previously unknown).

Further, regarding the “wet strength enhancers” mentioned at col. 4, lines 11-12 of Detrick, it is submitted that these compounds are not reinforcing fibers but additives of the resin-type that help keep the strength of the paper when the fiber-fiber bonds are weakened due to wetting by water.

In support of the above explanation, a copy of the introduction discussing wet-strength enhancers in Chan, Wet-Strength Resins and Their Application, TAPPI, Atlanta, Ga., pp. ix-xi (1994) is submitted with this paper. This introduction presents wet strength additives “for making wet-strength paper” (which is defined as “a paper which has extraordinary resistance to rupture or disintegration when saturated with water,” for example which “retains more than 15% of its dry tensile when wetted”).

Also, a copy of the introduction discussing mechanical properties and Chapter 9 on wet-strength adhesives in Scott, Principles of Wet End Chemistry, TAPPI, Ga., pp. 2 and 61-68 (1996) is submitted with this paper. The introduction of the term “mechanical properties” includes an explanation that “[p]aper has no inherent wet strength due to the nature of fiber-fiber bonds. Hence, wet strength must be achieved through the use of additives. Such additives, called wet strength resins, are widely used in the paper industry” and Chapter 9 presents and illustrates various wet strength resins and processes.

In the Declaration under Rule 1.132, Dr. Dietemann states that “[t]he person of ordinary skill in the art would not consider that teachings regarding wet strength enhancer resins could be replicated or are even useful to address issues related to the use of reinforcing fibers” (para. 8).

Thus, the notion of “wet strength enhancers” at col. 4, lines 11-12 of Detrick concerns wet strength additive of the resin type, but does not provide any motivation or incentive regarding reinforcing fibers.

More generally, regarding the assertion in the Office Action that the person of the art would learn from Detrick “to impart desired characteristics to either individual paper layer” and the postulate in the Office Action that the “desired characteristic” may be “wet strength to a particular side of the finished ply” (Office Action at page 6), it is submitted that even if, arguendo, a person of the art found a motivation or incentive to provide “wet strength to a particular side” of the paper of Doublet, there would have been no motivation or incentive to provide wet strength to a side that does not have a watermark, as opposed to a side that has a

watermark, or even on both sides. In any case, as discussed above, there would have been no motivation or incentive to provide reinforcing fibers, as opposed to “wet strength enhancers” mentioned at col. 4, lines 11-12 of Detrick.

In contrast, the present inventor has identified the problem that detection of a watermark is made harder in the presence of reinforcement fibers in the ply that contains the watermark, and as a result, he has provided the features of the presently claimed invention wherein (1) the first ply does not include any reinforcing fibers different from the fibers of the fibrous structure of the first ply and such that the paper would have a mechanical strength higher than a mechanical strength of a paper having identical weight in g/m^2 and identical composition except without the reinforcing element, and (2) the second ply does not include any watermark, as recited in present claim 25.

An advantage of these features is that detection of the watermark is not adversely impacted by the reinforcing fibers.

These features and their advantages are not taught or suggested in Doublet and Detrick, which are not even aware of any problem raised by reinforcing problems in a layer that also contains a watermark. Therefore, present claim 25 is not obvious over any combination of Doublet and Detrick.

Further, with respect to the dependent claims, it is submitted that the cited references fail to teach or suggest the combined features of these respective claims. Therefore, each of the claims dependent directly or indirectly on claim 25 is not obvious over the cited references taken alone or in any combination.

In view of the above, it is submitted that the rejections should be withdrawn.

Conclusion

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

If there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

If this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to Deposit Account No. 50-2866.

Respectfully submitted,
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